

## **REMARKS/ARGUMENTS**

### Status of Application

Claims 1-8 and 10-30 are pending. Claims 1-22 were in the application as filed, claims 23-26 were previously added, and claims 27-30 are new.

Claims 12-15 have been allowed.<sup>1</sup> The remaining claims have been rejected as follows:

- claim 26 under 35 U.S.C. § 101 because it is claiming a tangible media storing a representation of an image; and
- claims 1-8, 10-11, and 17-26 under 35 U.S.C. § 103(a) as being unpatentable in view of U.S. Patent No. 6,961,058 to Guo et al. (“Guo”).

Applicants have made the following claim amendments:

- amended claims 1, 5, 10, 17, 23, 25, and 26 to better distinguish over the prior art by better defining the nature of the filtered thickness;
- amended claims 8, 11, 12, 20, and 22 to cure minor informalities or clerical errors (not affecting the scope of the claim);
- amended claim 7 to change the dependency;
- amended claims 10, 12, 17, 23, 25, and 26 to eliminate an arguable requirement that the points in the neighborhood of the surface point include the surface point; and
- added dependent claims 27-30 to recite the possibilities that the plurality of surface points in the neighborhood of the surface point (a) includes the surface point, and (b) does not include the surface point.

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<sup>1</sup> The Office Action states that claims 12-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 12 was previously amended to incorporate the limitations of claims 10 and 11, while eliminating an unnecessary limitation in claim 12, and therefore Applicants are assuming that the objection was meant to be a statement of allowance.

Examiner Interview of April 26, 2007

Applicants wish to thank Examiners Andrew Yang and Mark Zimmerman for the productive telephone interview held on April 26, 2007. Present at the interview on behalf of Applicants were David N. Slone, Applicants' undersigned attorney, Bradley S. West, one of the inventors, and C. Bart Sullivan, Patent Program Manager at Pixar.

During the interview, Applicants discussed the "filtered thickness" aspect of the invention and pointed out how it differed from the arguable filtering that occurs in Guo. Applicants also provided a sample claim amendment that set forth an approach for better distinguishing over Guo. These points will be discussed below.

Prior Art Rejection

As mentioned above, claims 1-8, 10-11, and 17-26 have been rejected under 35 U.S.C. § 103(a) as being unpatentable in view of U.S. Patent No. 6,961,058 to Guo. In view of the claim amendments, Applicants respectfully request reconsideration and withdrawal of the rejections.

Where necessary, the independent claims have been amended to recite, one way or another, determining a plurality of thickness values associated with a plurality of surface points in the neighborhood of the surface point, and *using the plurality of thickness values to determine a filtered thickness value, which filtered thickness value is used in determining the illumination contribution*. This aspect of the invention is discussed at paragraphs [0070]-[0072].

As discussed during the interview, Guo could, for the sake of argument, be considered to disclose filtering of two types:

- due to the passage of light through the cloth, with the degree of absorption being a function of the location at which the ray of light intercepts each yarn strand (Guo's FIG. 11b); and
- an averaging of lumislices to provide low-resolution lumislices for greater viewing distances (Guo's FIGS. 12a and 12b).

These two types of filtering are distinct from the "filtered thickness value" recited in the claims.

The filtered thickness value as presently recited in the claims is determined by using the thickness map to provide a plurality of thickness values corresponding to a plurality of surface points in the neighborhood of a particular surface point. The filtered thickness value is then determined based on the plurality of thickness values, for example by averaging or other desired filtering operation.

In the Office Action, the Examiner stated “Applicant’s arguments filed October 2, 3006 have been fully considered but they are not persuasive. Applicant argues that Guo et al. do not disclose or suggest using a filtered thickness value based on multiple thickness values to determine the illumination contribution; however, the claim language does not limit how filtered thickness values are obtained.”

The claims have been amended to make it clearer how to obtain the “filtered thickness value” that is used to determine the illumination contribution at the surface point. The amendment of claim 1 is representative. The thickness map has been amended to recite that it “includes, for a plurality of rays from the first lighting source, respective thickness functions, each thickness function representing thickness values of the object with respect to distance from the first lighting source along the respective ray.”

Further, claim 1 has been amended to recite that the plurality of thickness values is determined “for a first plurality of surface points in the neighborhood of the surface point.” This claim amendment differs from the sample amendment provided for the interview.<sup>2</sup> This difference was introduced to remove an arguable limitation that is not needed to distinguish over the prior art. More specifically, there is no requirement that the plurality of surface points in the neighborhood of the surface point include the surface point itself. The examples given in paragraph [0072] (“For example, in thinner objects, the neighborhood may be a 3x3 array, whereas for thicker objects, the neighborhood may be a 4x4, 5x5, 11x11, etc. array, or the like.”) contemplate both possibilities. A neighborhood that is a square with an even number of points on a side (e.g., a 4x4 array) would appear to exclude the point at the center, while a square with

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<sup>2</sup> The sample amendment provided to the Examiner recited that the plurality of thickness values is determined “for the surface point and a set of additional surface points on the object.”

an odd number of points on a side (e.g., a 4x4 array) would appear to include the point at the center.

To underscore this point, Applicant has added dependent claims 27 and 29 specifically reciting the case where the “plurality of surface points in the neighborhood of the surface point includes the surface point,” and dependent claims 28 and 30 specifically reciting the case where the “plurality of surface points in the neighborhood of the surface point does not include the surface point.” These claims do not add new matter for the reasons discussed above.

Applicants have amended allowed claim 12 to eliminate an unnecessary limitation that the plurality of thickness values is in response to “*the surface point and the neighborhood of surface points.*” As discussed above, the neighborhood of surface points may or may not include the surface point itself.

Applicants believe that the amendment to the claims clarifies, where necessary, the patentable distinctions over Guo clear, and thus believe that the claims are allowable over the prior art.

#### Rejection for Non-Statutory Subject Matter

Claim 26 has been rejected as drawing to non-statutory subject matter “because it is claiming a tangible media storing a representation of an image, which is nonfunctional descriptive material.” The Examiner cites MPEP § 2106, relevant portions of which read as follows:

When nonfunctional descriptive material is recorded on some computer-readable medium, in a computer or on an electromagnetic carrier signal, it is not statutory since no requisite functionality is present to satisfy the practical application requirement. Merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored in a computer-readable medium, in a computer, on an electromagnetic carrier signal does not make it statutory. See *Diehr*, 450 U.S. at 185-86, 209 USPQ at 8 (noting that the claims for an algorithm in *Benson* were unpatentable as abstract ideas because “[t]he sole practical application of the algorithm was in connection with the programming of a general purpose computer.”). Such a result would exalt form over substance. In *re Sarkar*, 588 F.2d 1330, 1333, 200 USPQ 132, 137 (CCPA 1978) (“[E]ach invention must be evaluated as claimed; yet semantogenic considerations preclude a determination based solely on words appearing in the claims. In the final analysis under Sec. 101, the claimed invention, as a whole, must be evaluated for what it is.”) (quoted with approval in *Abele*, 684 F.2d at 907, 214 USPQ at 687). See also In *re Johnson*, 589 F.2d 1070, 1077, 200 USPQ 199, 206 (CCPA 1978) (“form of the claim is often an exercise in drafting”). Thus, nonstatutory music is not a computer component

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and it does not become statutory by merely recording it on a compact disk. Protection for this type of work is provided under the copyright law.

Applicants respectfully submit that the image stored on the tangible medium in claim 26 is not nonfunctional descriptive material. The claim is a product-by-process claim, with a decidedly functional method that is not merely descriptive.

Moreover, the claimed subject matter articulates a practical application and achieves a “useful, concrete and tangible result.” Rendered images have commercial and/or esthetic and cultural value. The articulated steps reflect the limitations of claims 1, 2, and 3, which are believed allowable over the prior art for the reasons articulated above.

Applicants request that the Examiner reconsider and withdraw the rejection.

### CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

/David N. Slone, Reg. No. 28,572/

David N. Slone  
Reg. No. 28,572

TOWNSEND and TOWNSEND and CREW LLP  
Two Embarcadero Center, Eighth Floor  
San Francisco, California 94111-3834  
Tel: 650-326-2400  
Fax: 415-576-0300

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